United States Department of Energy

Savannah River Site

Record of Decision
Remedial Alternative Selection for the Gunsite 218 Rubble Pile (631-23G) (U)

CERCLIS Number: 80

SRNS-RP-2010-00051

Revision 1

May 2010

Prepared by:
Savannah River Nuclear Solutions, LLC
Savannah River Site
Aiken, SC 29808

Prepared for U.S. Department of Energy under Contract No. DE-AC09-08SR22470

DISCLAIMER

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Prepared for
U.S. Department of Energy
and
Savannah River Nuclear Solutions, LLC
Aiken, South Carolina

RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION (U)

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Savannah River Operations Office
Aiken, South Carolina

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DECLARATION FOR THE RECORD OF DECISION

Unit Name and Location

Gunsite 218 Rubble Pile (631-23G)

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification Number: OU - 80

Savannah River Site

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Identification Number: SC1 890 008 989

Aiken, South Carolina

U.S. Department of Energy

The Gunsite 218 Rubble Pile Operable Unit (OU) [Gunsite 218 OU] is listed as a Resource Conservation and Recovery Act (RCRA) 3004(u) Solid Waste Management Unit/CERCLA unit in Appendix C of the Federal Facility Agreement (FFA) for the Savannah River Site (SRS).

The FFA is a legally binding agreement between regulatory agencies [U.S. Environmental Protection Agency (USEPA) and South Carolina Department of Health and Environmental Control (SCDHEC)] and regulated entities [U.S. Department of Energy (USDOE)] that establishes the responsibilities and schedules for the comprehensive remediation of SRS. The media associated with this OU are soil and groundwater.

Statement of Basis and Purpose

This decision document presents the selected remedy for the Gunsite 218 OU, in Barnwell County, South Carolina, which was chosen in accordance with CERCLA, as amended by the Superfund Amendments Reauthorization Act (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the information contained in the Administrative Record File for this site.

The USEPA, SCDHEC and USDOE concur with the selected remedy.

Assessment of the Site

There has been no release of contaminants at the Gunsite 218 OU that would require a response action to protect the public health or welfare or the environment based on unrestricted land use (i.e., residential). The remedy of No Action has been selected as the response action for Gunsite 218 OU in this Record of Decision (ROD).

Description of the Selected Remedy

The selected remedy for the Gunsite 218 OU is No Action. The site poses no risk to human health and the environment based on unrestricted (i.e., residential) land use; therefore, no land use controls or other remedies are required. There are no human health, ecological, or contaminant migration refined constituents of concern (RCOCs), and no principal threat source material (PTSM) in soil media. There are no constituents that exceed maximum contaminant levels (MCLs) in the groundwater. Gunsite 218 OU is located outside any industrial buffer zones and is suitable for unrestricted land use. However, access to Gunsite 218 OU is restricted within the SRS boundaries and USDOE maintains control of SRS land to prevent unrestricted use. The RCRA permit will be revised to reflect selection of the final remedy using the procedures under 40 Code of Federal Regulations (CFR) Part 270, and South Carolina Hazardous Waste Management Regulations (SCHWMR) R.61-79.264.101; 270.

Statutory Determinations

Based on the unit RCRA Facility Investigation/Remedial Investigation with Baseline Risk Assessment (RFI/RI/BRA) report (WSRC 2008), the Gunsite 218 OU poses no threat to human health and the environment. Therefore, No Action has been selected as the remedy for the Gunsite 218 OU

Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure, a five-year remedy review will not be required for this remedial action.

Data Certification Checklist

This ROD certifies that the following information is either provided in this ROD or an explanation is provided for information that is not included.

- RCOCs and their respective concentrations - *This information is not included because no RCOCs were identified at the Gunsite 218 OU.*

- Baseline risk represented by the RCOCs - *This information is not included because no RCOCs were identified at the Gunsite 218 OU.*

- Cleanup levels established for the RCOCs and the basis for the levels - *This information is not included because there are no hazardous substances in place that pose a threat to human health and the environment based on unrestricted land use.*

- Current and reasonably anticipated future land and groundwater use assumptions used in the BRA and ROD – *This information is provided in Section VI.*

- Potential land and groundwater use that will be available at the site as a result of the selected remedy – *This information is provided in Section VI.*

- Estimated capital, operation and maintenance, and total present worth cost; discount rate; and the number of years over which the remedy cost estimates are projected - *This information is not required because a No Action remedy was selected.*

- Key decision factor(s) that led to selecting the remedy (i.e., describe how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria) - *This information is not required because a No Action remedy was the only alternative considered.*

- How source materials constituting principal threats are addressed – *This information is not included as the Gunsite 218 OU does not contain any principal threat source material.*

8/20/10
Date

Karen Guevara
Assistant Manager for Closure Project
U. S. Department of Energy
Savannah River Operations Office

10/5/10
Date

Franklin E. Hill
Director
Superfund Division
U. S. Environmental Protection Agency - Region 4

9/10/10
Date

Daphne G. Neel
Bureau Chief
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control

DECISION SUMMARY
REMEDIAL ALTERNATIVE SELECTION (U)

Gunsite 218 Rubble Pile (631-23G)

CERCLIS Number: 80

SRNS-RP-2010-00051
Revision 1

May 2010

Savannah River Site
Aiken, South Carolina

Prepared By:

Savannah River Nuclear Solutions, LLC
for the
U. S. Department of Energy under Contract DE-AC09-96SR18500
Savannah River Operations Office
Aiken, South Carolina

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LIST OF FIGURES

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LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirement
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulation
CM	contaminant migration
COC	constituent of concern
COPC	constituent of potential concern
CPT	cone penetrometer technology
CSM	conceptual site model
DDD	dichlorodiphenyl-dichloroethane
DDE	dichlorodiphenyl-dichloroethylene
DDT	dichlorodiphenyl-trichloroethane
FFA	Federal Facility Agreement
ft	feet
GS 218 OU	Gunsite 218 Rubble Pile (631-23G) Operable Unit
HI	hazard index
HQ	hazard quotient
HSWA	Hazardous and Solid Waste Amendments
IOU	Integrator Operable Unit
km	kilometer
km^2	square kilometer
LLC	Limited Liability Company
m	meter
MCL	maximum contaminant level
mg/kg	milligram per kilogram
mi	mile
mi^2	square mile
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NPL	National Priorities List
OU	operable unit
PCB	polychlorinated biphenyl
PTSM	principal threat source material

LIST OF ACRONYMS AND ABBREVIATIONS *(Continued)*

RAO	remedial action objective
RCOC	refined constituent of concern
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RGO	remedial goal option
RI	Remedial Investigation
ROD	Record of Decision
RSL	regional screening level
SARA	Superfund Amendments Reauthorization Act
SB/PP	Statement of Basis/Proposed Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SCHWMR	South Carolina Hazardous Waste Management Regulations
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
TAL	target analyte list
TCE	tricholorethylene
TCL	target compound list
TNT	trinitrotoluene
UCL	upper confidence limit
USDOE	U.S. Department of Energy
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
WSRC	Washington Savannah River Company, LLC

I. SAVANNAH RIVER SITE AND OPERABLE UNIT NAME, LOCATION, AND DESCRIPTION

Gunsite 218 Rubble Pile (631-23G)

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification Number: OU- 80

Savannah River Site

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Identification Number: SC1 890 008 989

Aiken, South Carolina

U.S. Department of Energy (USDOE)

Savannah River Site (SRS) occupies approximately 802.9 km^2 (310 mi^2) of land adjacent to the Savannah River, principally in Aiken and Barnwell counties of South Carolina (Figure 1). SRS is located approximately 40.2 km (25 mi) southeast of Augusta, Georgia, and 32.1 km (20 mi) south of Aiken, South Carolina.

The USDOE owns SRS, which historically produced tritium, plutonium, and other special nuclear materials for national defense and the space program. Chemical and radioactive wastes are by-products of nuclear material production processes. Hazardous substances, as defined by the CERCLA, are currently present in the environment at SRS.

The Federal Facility Agreement (FFA) (FFA 1993) for SRS lists the Gunsite 218 Rubble Pile (631-23G) Operable Unit (OU) [Gunsite 218 OU], as a Resource Conservation and Recovery Act Solid Waste Management Unit/Comprehensive Environmental Response, Compensation and Liability Act (RCRA/CERCLA) unit requiring further evaluation.

The Gunsite 218 OU (Figure 2) was evaluated through an investigation process that integrates and combines the RCRA corrective action process with the CERCLA remedial process to determine the actual or potential impact to human health and the environment of releases of hazardous substances to the environment.

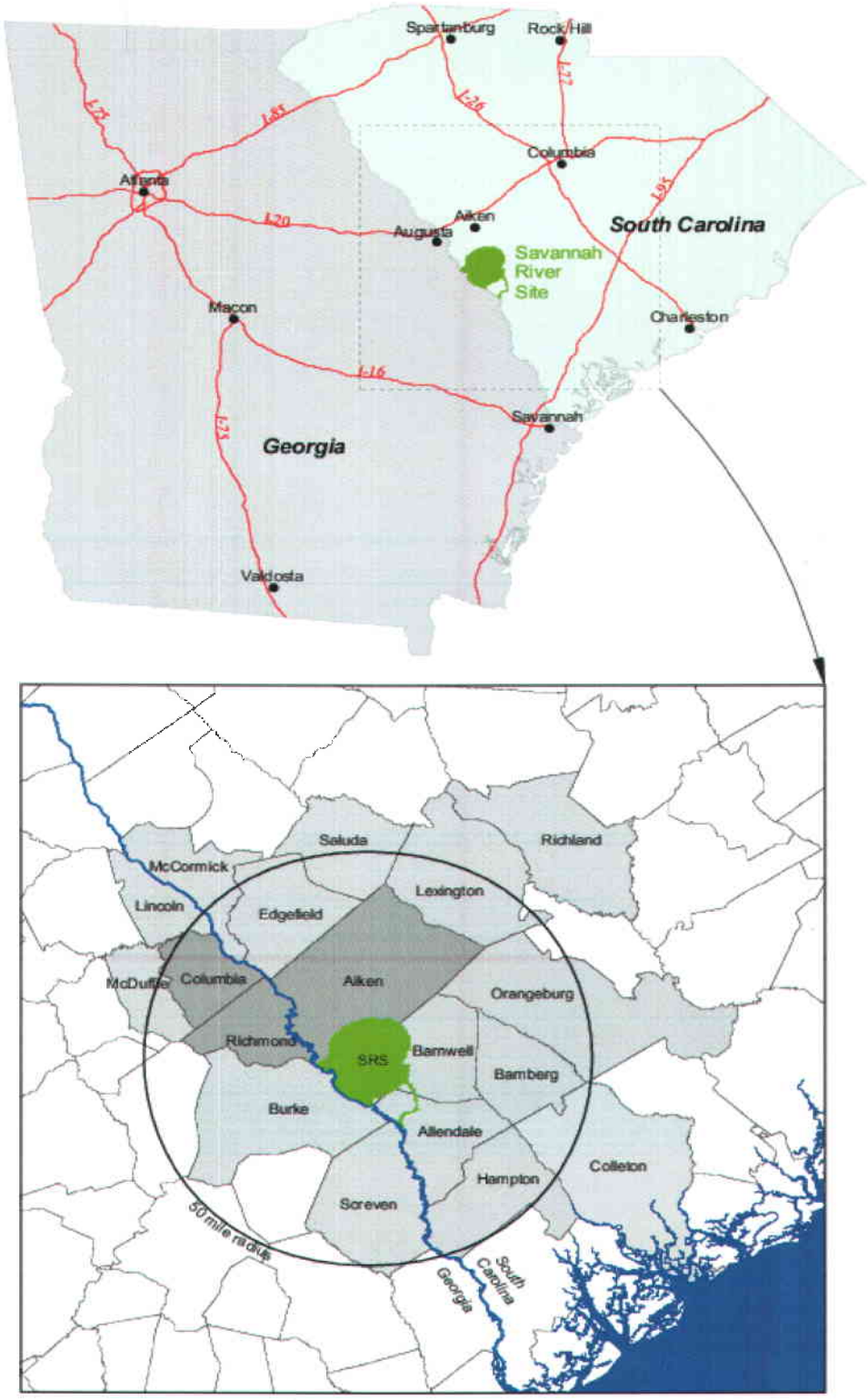


Figure 1. Location of the Savannah River Site

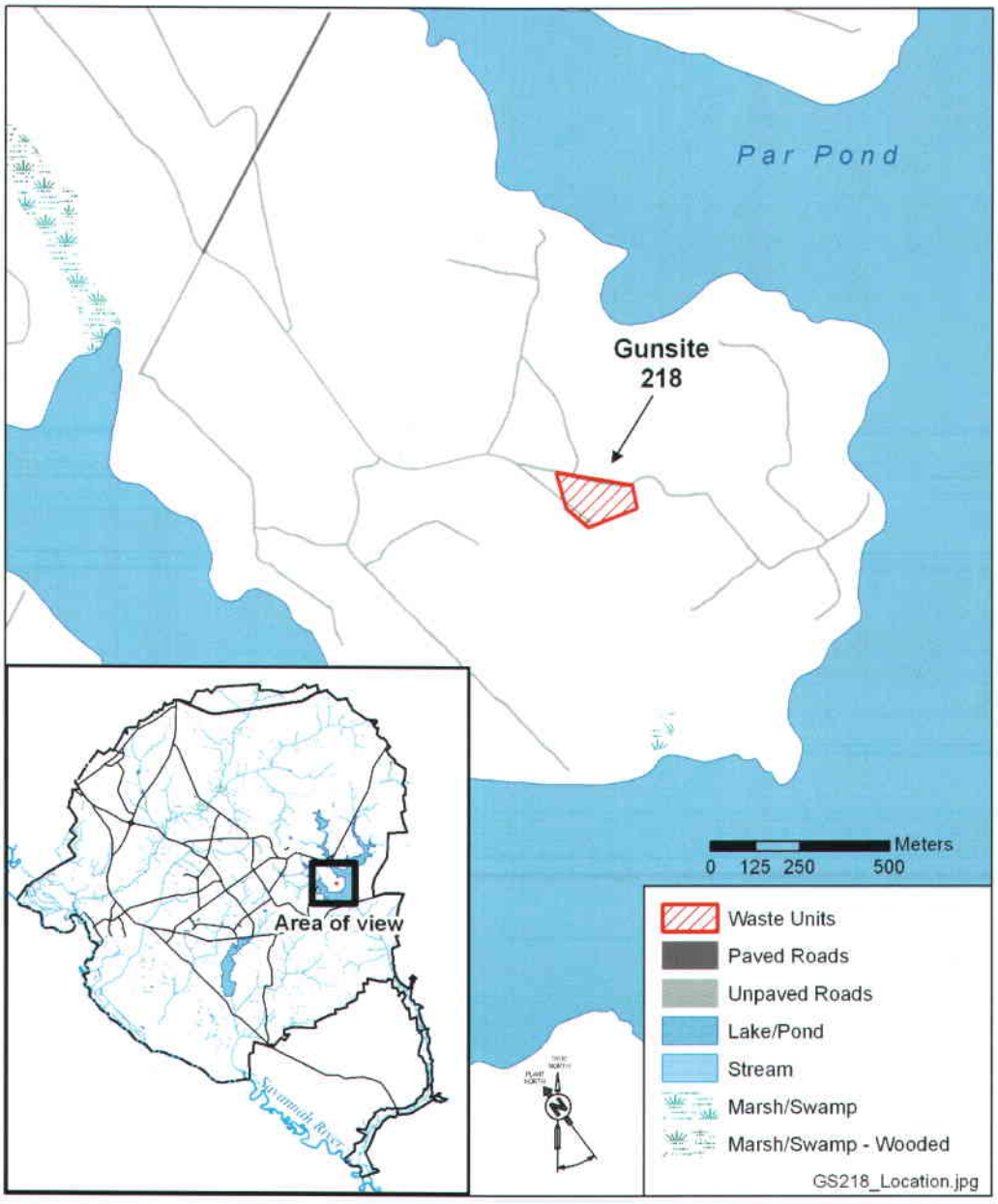


Figure 2. Location of the Gunsite 218 OU within the Savannah River Site

II. SRS OPERATIONAL AND COMPLIANCE HISTORY

The primary mission of SRS has been to produce tritium, plutonium, and other special nuclear materials for our nation's defense programs. Production of nuclear materials for the defense program was discontinued in 1988. SRS has provided nuclear materials for the space program, as well as for medical, industrial, and research efforts up to the present. Chemical and radioactive wastes are by-products of nuclear material production processes. These wastes have been treated, stored and, in some cases, disposed at SRS. Past disposal practices have resulted in soil and groundwater contamination.

Hazardous waste materials handled at SRS are managed under RCRA, a comprehensive law requiring responsible management of hazardous waste. Certain SRS activities require South Carolina Department of Health and Environmental Control (SCDHEC) operating or post-closure permits under RCRA. SRS received a RCRA hazardous waste permit from the SCDHEC, which was most recently renewed on September 30, 2003. Module VIII of the Hazardous and Solid Waste Amendments (HSWA) portion of the RCRA permit mandates corrective action requirements for non-regulated solid waste management units subject to RCRA 3004(u).

On December 21, 1989, SRS was included on the National Priorities List (NPL). The inclusion created a need to integrate the established RCRA facility investigation (RFI) program with CERCLA requirements to provide for a focused environmental program. In accordance with Section 120 of CERCLA 42 United States Code Section 9620, USDOE has negotiated an FFA (FFA 1993) with the U.S. Environmental Protection Agency (USEPA) and SCDHEC to coordinate remedial activities at SRS as one comprehensive strategy that fulfills these dual regulatory requirements. USDOE functions as the lead agency for remedial activities at SRS, with concurrence by the USEPA - Region 4 and the SCDHEC.

Operable Unit Operational and Compliance History

The Gunsite 218 OU is located within a planted pine forest on a peninsula extending into the west side of Par Pond, as indicated on Figure 2. The Gunsite 218 OU is a former anti-aircraft gun emplacement used to protect the (SRS) facility and is approximately 2.2 hectares (5.5 acres) in size. No streams exist in the vicinity of the OU.

Before being made obsolete by intercontinental missiles, classic World War II-style anti-aircraft batteries provided physical protection for SRS facilities against possible enemy air attack. Military personnel manned 75-mm and 90-mm anti-aircraft gun emplacements and support facilities at SRS from 1955 to 1957 (WSRC 1990). The range of the anti-aircraft guns exceeded 16.1 km (10 mi). There were two types of gunsites at SRS, called "central" and "satellite." Central gunsites featured 90-mm anti-aircraft guns (sometimes with 75-mm pieces as well), and extensive administrative support facilities including barracks, mess halls, office buildings, and motor pools. Five central gunsites were located at SRS. The satellite gunsites deployed only 75-mm Skysweeper guns, with no barracks, mess halls or other administrative facilities; there were about twenty satellite gunsites at SRS. Gunsite 218 was a satellite gunsite.

The Gunsite 218 OU includes the abandoned remains and structures of Gunsite 218 and disturbed areas immediately surrounding the former gunsite, which were identified during field reconnaissance. The OU was named the "Gunsite 218 Rubble Pile" based on the discovery of three rubble piles located throughout the unit. Although there were no records of the types of waste or disposal activities available for the rubble piles, no hazardous materials were found during characterization activities. A diagram of the physical features of the Gunsite 218 OU is provided in Figure 3. Areas of potential interest included four (4) bunkers constructed of sand bags and/or mounded earth, two (2) concrete slab foundations (i.e., depicted as the former "ready room" and the "generator shed"), the sites of two (2) above-ground fuel tanks (removed), one (1) underground diesel tank (removed January 1992), an abandoned septic tank and tile field system, an

old water well (abandoned in June 2008), several earthen mounds and depressions, several randomly dispersed cans and steel drums, and a concrete culvert storage area.

A unit screening program was implemented at the Gunsite 218 OU in 1988 (WSRC 1990). The unit screening consisted of the collection of eleven (11) soil-gas samples in the vicinity of bunkers where old paint and solvent (paint thinner) cans were observed. In addition, soil samples were obtained from various depths at thirteen (13) soil boring locations. Screening data for the Gunsite 218 OU indicated the presence of the following substances at concentrations exceeding the analytical method detection limits: metals (arsenic, barium, and mercury in trace amounts at or slightly above detection limits; plus chromium, lead, tin, vanadium and zinc); volatile organic compounds (acetone, carbon disulfide, and methylene chloride which are commonly detected in the laboratory as artifacts); trace levels of radionuclide indicators (gross alpha and nonvolatile beta); and total petroleum hydrocarbons.

As a result of these findings, Gunsite 218 OU was placed in Appendix C of the FFA for further evaluation. The pre-work plan characterization, conducted in May/June of 2007 consisted of twenty-eight (28) soil borings and four (4) temporary piezometers. This sampling event focused on possible contamination source zones of petroleum spills associated with buildings, generators, or other areas; solvents, paint thinners, and paint associated with discarded cans; trichloroethylene (TCE) and/or other solvents derived from cleaning artillery pieces; and trinitrotoluene (TNT) breakdown products and/or lead from ammunition storage. There were four (4) cone penetrometer technology (CPT) groundwater sample locations at Gunsite 218 OU. The four (4) temporary groundwater monitoring wells (G218-001 through G218-004) were sampled from the water table aquifer, and analyzed for volatile organic compounds (VOCs). The analytical groundwater results were compared to USEPA's drinking water standards maximum contaminant levels (MCLs). No groundwater analyte result was above its respective MCL. Results of all the pre-work plan characterization efforts were reviewed by USDOE, USEPA, and SCDHEC and additional data gaps in soil sampling were identified

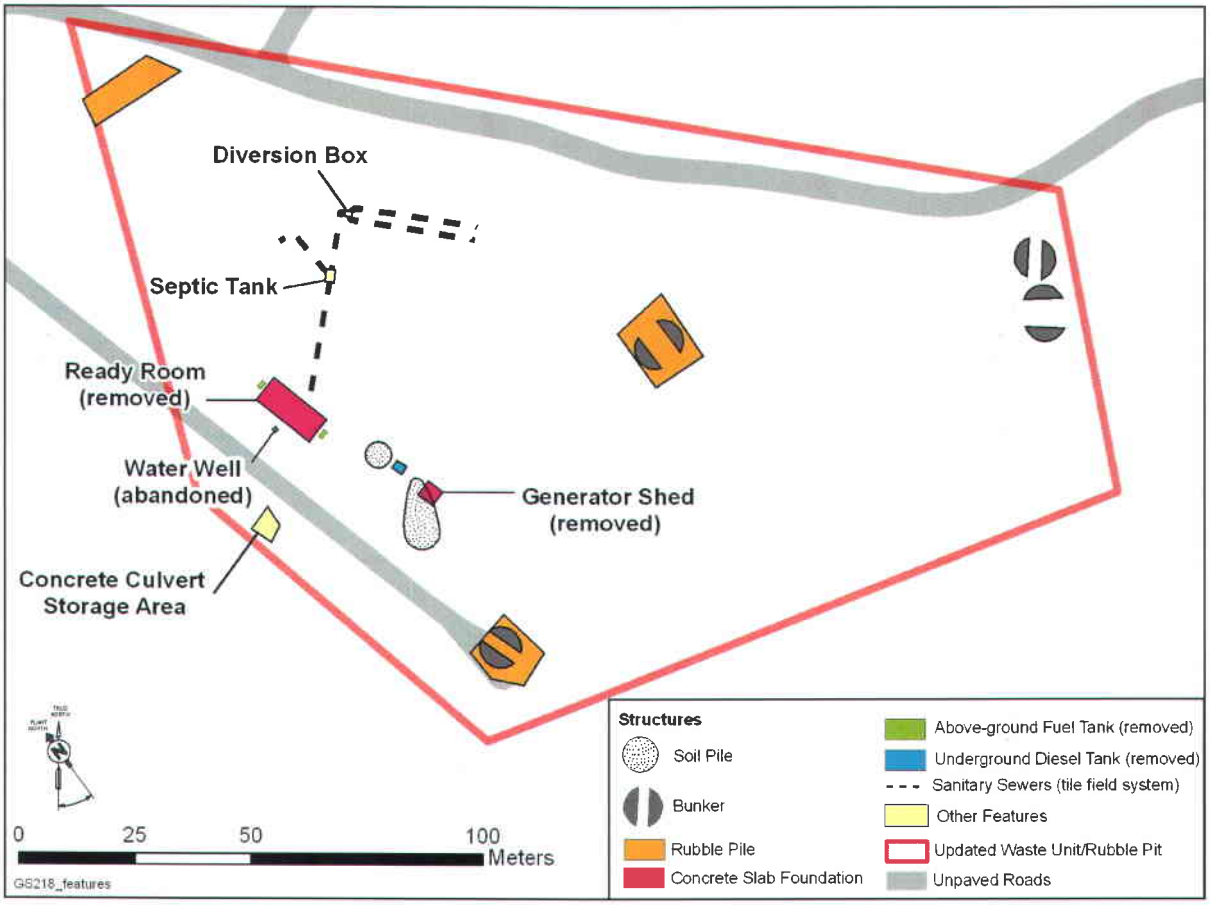


Figure 3. Layout of Gunsite 218 OU

and addressed in the RCRA Facility Investigation/Remedial Investigation (RFI/RI) Work Plan (WSRC 2008).

The RFI/RI Work Plan (WSRC 2008) was submitted and approved and the field characterization began in November 2007. The field characterization consisted of eighteen (18) soil borings. The samples were analyzed for target compound list (TCL) volatiles, semivolatiles, pesticides, polychlorinated biphenyls (PCBs), target analyte list (TAL) metals and cyanide.

The human health and ecological risk evaluations, contaminant migration (CM) analysis, principal threat source material (PTSM) evaluation and comparison of groundwater concentrations to MCLs for the Gunsite 218 OU and supporting documents were included as Appendices A through F of the Statement of Basis/Proposed Plan (SB/PP) for the Gunsite 218 OU (SRNS 2009). No refined constituents of concern (RCOCs) were identified in soil media based on an unrestricted land use scenario. Additionally, there were no constituents that exceeded MCLs in groundwater media.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Both RCRA and CERCLA require the public to be given an opportunity to review and comment on the draft permit modification and proposed remedial alternative. Public participation requirements are listed in South Carolina Hazardous Waste Management Regulation (SCHWMR) R.61-79.124 and Sections 113 and 117 of CERCLA (42 United States Code Sections 9613 and 9617). These requirements include establishment of an Administrative Record File that documents the investigation and selection of the remedial alternative for addressing the Gunsite 218 OU soils and groundwater. The Administrative Record File must be established at or near the facility at issue.

The SRS FFA Community Involvement Plan (WSRC 2006) is designed to facilitate public involvement in the decision-making process for permitting, closure, and the selection of remedial alternatives. The SRS FFA Community Involvement Plan addresses the requirements of RCRA, CERCLA, and the National Environmental Policy Act, 1969 (NEPA). SCHWMR R.61-79.124 and Section 117(a) of CERCLA, as amended, require the advertisement of the draft permit modification and notice of any proposed remedial action and provide the public an opportunity to participate in the selection of the remedial action. The SB/PP for the Gunsite 218 OU, a part of the Administrative Record File, highlights key aspects of the investigation and identifies the preferred action for addressing the Gunsite 218 OU.

The FFA Administrative Record File, which contains the information pertaining to the selection of the response action, is available at the following locations:

U.S. Department of Energy
Public Reading Room
Gregg-Graniteville Library
University of South Carolina – Aiken
171 University Parkway
Aiken, South Carolina 29801
(803) 641-3465

Thomas Cooper Library
Government Documents Department
University of South Carolina
Columbia, South Carolina 29208
(803) 777-4866

The RCRA Administrative Record File for SCDHEC is available for review by the public at the following locations:

The South Carolina Department of
Health and Environmental Control
Bureau of Land and Waste Management
8911 Farrow Road
Columbia, South Carolina 29203
(803) 896-4000

The South Carolina Department of Health and
Environmental Control –Region 5
Aiken Environmental Quality Control Office
206 Beaufort Street, Northeast
Aiken, South Carolina 29801
(803) 641-7670

The public was notified of the public comment period through the *SRS Environmental Bulletin*, a newsletter sent to citizens in South Carolina and Georgia, and through notices in the *Aiken Standard*, the *Allendale Citizen Leader*, the *Augusta Chronicle*, the *Barnwell People-Sentinel*, and *The State* newspaper. The public comment period was also announced on local radio stations.

The SB/PP 45-day public comment period began on February 11, 2010, and ended on March 28, 2010. A Responsiveness Summary, prepared to address any comments received during the public comment period, is provided in Appendix A of the Record of Decision (ROD). A Responsiveness Summary will also be available in the final RCRA permit.

IV. SCOPE AND ROLE OF THE OPERABLE UNIT

Due to the complexity and size of multiple waste units in different areas, the SRS is divided into watersheds for the purpose of managing a comprehensive cleanup strategy. The SRS is segregated into six watersheds: Upper Three Runs, Lower Three Runs, Fourmile Branch, Steel Creek, Pen Branch, and the Savannah River. In addition, the SRS also identifies six Integrator Operable Units (IOUs), which are the surface water bodies and associated wetlands that correspond to the six respective watersheds. Waste units within a watershed may be evaluated and remediated individually or grouped with other waste units and evaluated as part of a larger Area OU. Upon disposition of all the waste units within a watershed, a final comprehensive ROD for the corresponding IOU (i.e., surface water and associated wetlands) will be pursued with additional public involvement. The Gunsite 218 OU is located within the Lower Three Runs watershed (Figure 4).

The Gunsite 218 OU is not considered a "source control" unit; i.e., the unit does not contain contaminated soils that could act as a source of future contamination to the groundwater through leaching. In addition to the Gunsite 218 OU, there are many OUs within the Lower Three Runs Watershed. Upon disposition of all OUs within the watershed of the Lower Three Runs IOU, a final ROD for the Lower Three Runs IOU will be pursued.

The Gunsite 218 OU poses no risk to human health or the environment under an unrestricted land use scenario. No RCOCs have been identified for human health or ecological receptors at the Gunsite 218 OU. Since no RCOCs are associated with the Gunsite 218 OU, No Action is the selected remedy. This means no action will be taken

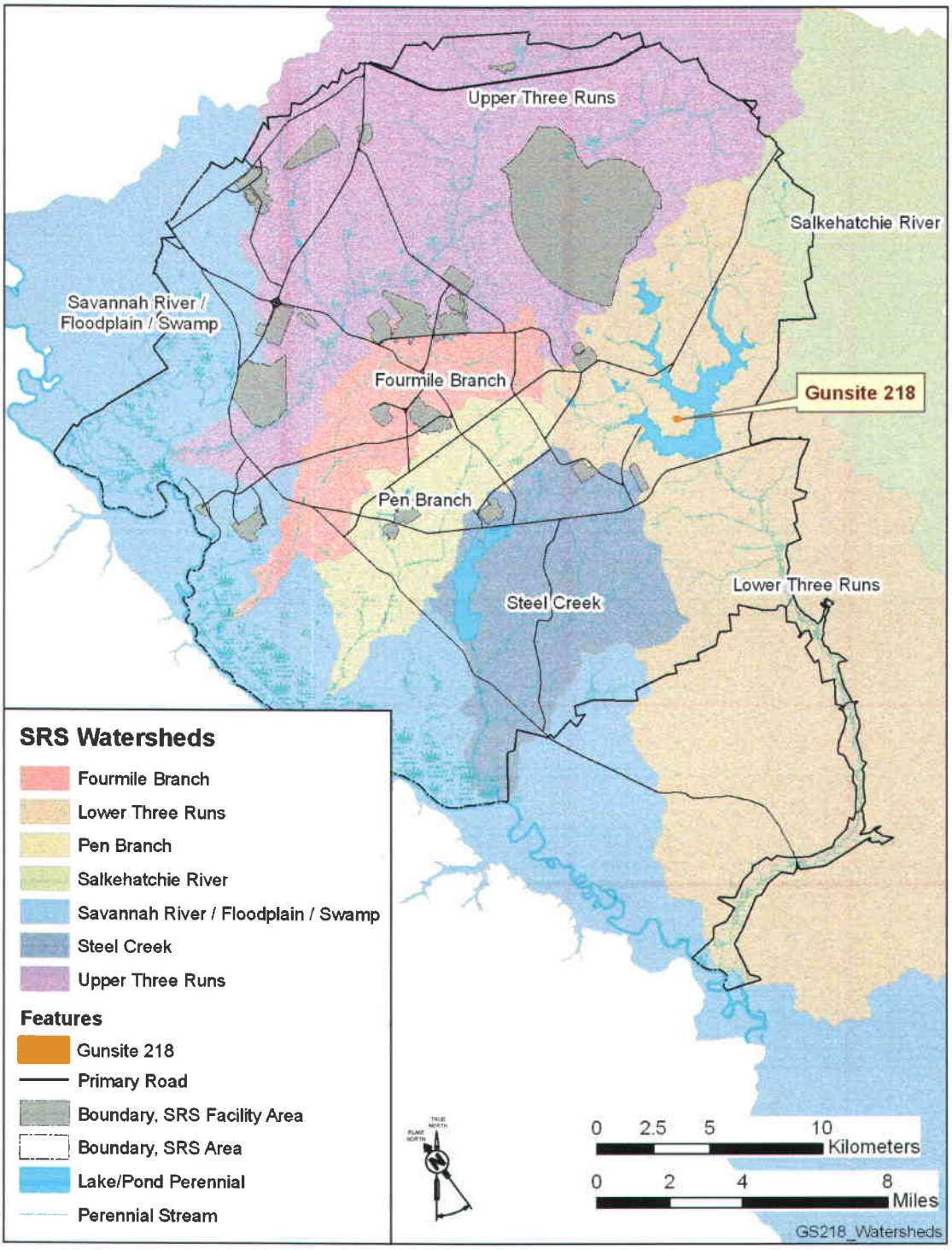


Figure 4. Layout of the Gunsite 218 OU within the Lower Three Runs Watershed

at the Gunsite 218 OU, no OU-specific land use controls are necessary to prevent against unrestricted use, and this unit will remain in its present condition.

V. OPERABLE UNIT CHARACTERISTICS

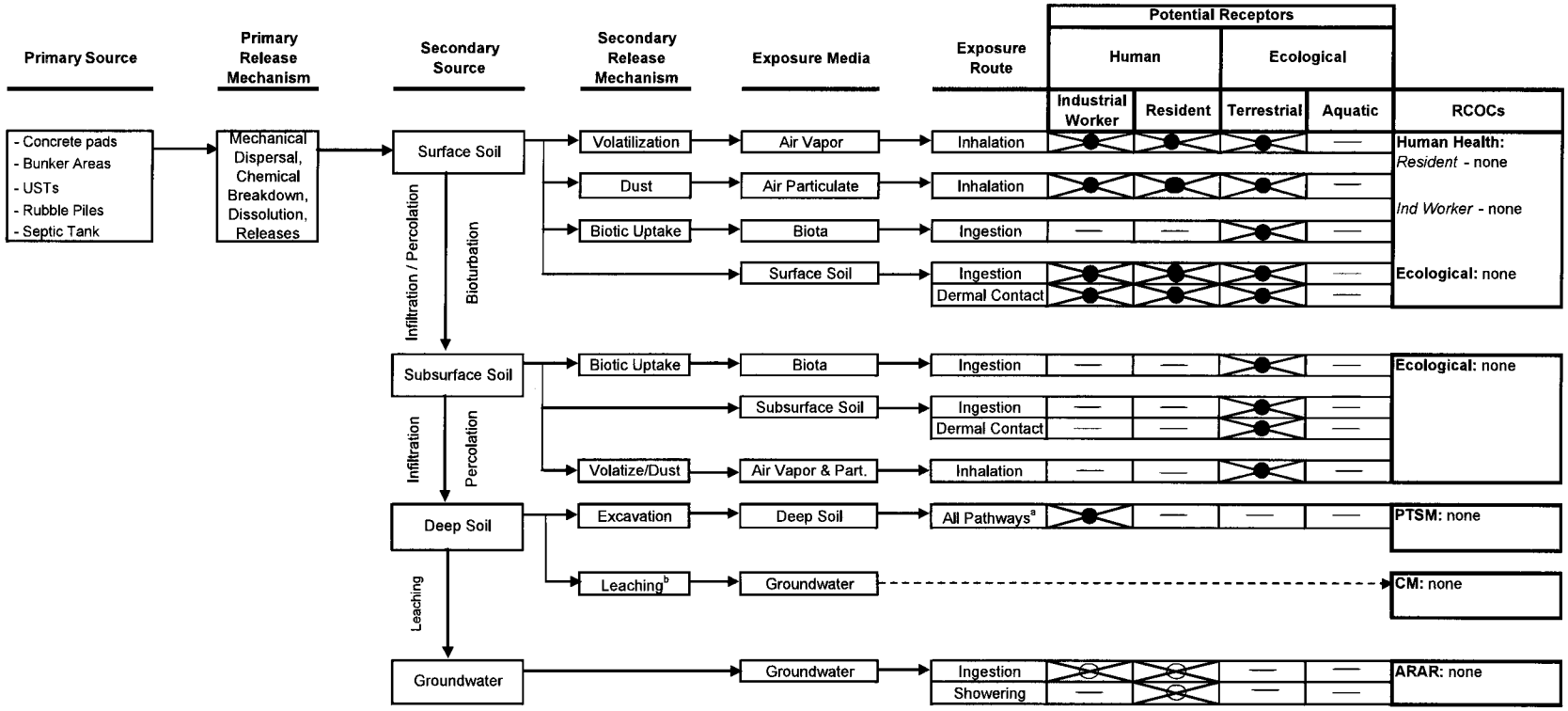
Conceptual Site Model for the Gunsite 218 OU

The conceptual site model (CSM) for the Gunsite 218 OU is presented in Figure 5. A CSM identifies known and suspected sources of contamination, types of contaminants and potentially affected media, known and potential routes of migration, and known and potential human and ecological receptors.

The primary sources of potential contamination at the Gunsite 218 OU were releases of petroleum spills associated with buildings, generators, or other areas; solvents, paint thinners, and paint associated with discarded cans; TCE and/or other solvents derived from cleaning artillery pieces; and TNT breakdown products and/or lead from ammunition storage.

If the primary source were to contact other media, secondary sources of contamination could be created through several release mechanisms. Typically, the potential secondary release mechanisms include release of volatile constituents from the soil (volatilization), generation of contaminated fugitive dust by wind or other surface soil disturbance, biotic uptake, bioturbation between surface and subsurface soils and infiltration/ percolation/leaching to groundwater. Contact with contaminated environmental media creates pathways for both human and ecological receptors. These are assessed in the risk evaluation. The exposure media at this OU include ambient air (vapor and particulates), soils, groundwater, and biota.

Human receptors for risk assessment purposes include the future industrial worker and hypothetical future on-unit resident. The general public is not considered to be a potential human receptor because the unit is located approximately 3.0 km (1.9 mi) from the nearest SRS boundary. Access by the general public has been prohibited by strict,



a All pathways represent ingestion, inhalation and dermal contact exposure for the principal threat source material (PTSM) evaluation for toxicity.
b - Leaching represents the potential of a contaminant in soil to migrate to groundwater above MCLs/RSLs per the contaminant migration (CM) analysis and does not represent a human health or ecological exposure route.

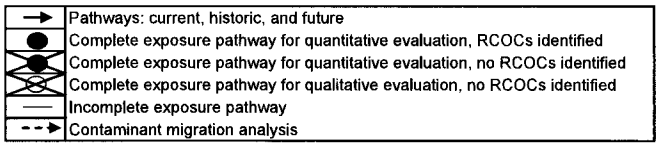


Figure 5 Conceptual Site Model for the Gunsite 218 OU

long-term entry control procedures and site security inspections. The long distances and access restrictions make all pathways for the general public incomplete.

Media Assessment

Historic investigation and characterization activities at the OU have included soil and groundwater analysis. The sample locations are provided in Figure 6.

Soil Investigation

A unit screening program was implemented at the Gunsite 218 OU in 1988 (WSRC 1990). The unit screening consisted of the collection of eleven (11) soil-gas samples in the vicinity of bunkers where old paint and solvent (paint thinner) cans were observed. In addition, soil samples were obtained from various depths at thirteen (13) soil boring locations. Screening data for the Gunsite 218 OU indicated the presence of the following substances at concentrations exceeding the analytical method detection limits: metals (arsenic, barium, and mercury in trace amounts at or slightly above detection limits; plus chromium, lead, tin, vanadium and zinc); VOCs (three compounds, acetone, carbon disulfide, and methylene chloride commonly detected as laboratory artifacts); trace levels of radionuclide indicators (gross alpha and nonvolatile beta); and total petroleum hydrocarbons.

Pre-workplan characterization was performed in May/June 2007. The pre-work plan characterization consisted of twenty-eight (28) soil borings and four (4) temporary piezometers. This sampling event focused on possible contamination source zones of petroleum spills associated with buildings, generators, or other areas; solvents, paint thinners, and paint associated with discarded cans; TCE and/or other solvents derived from cleaning artillery pieces; and TNT breakdown products and/or lead from ammunition storage (WSRC 2008).

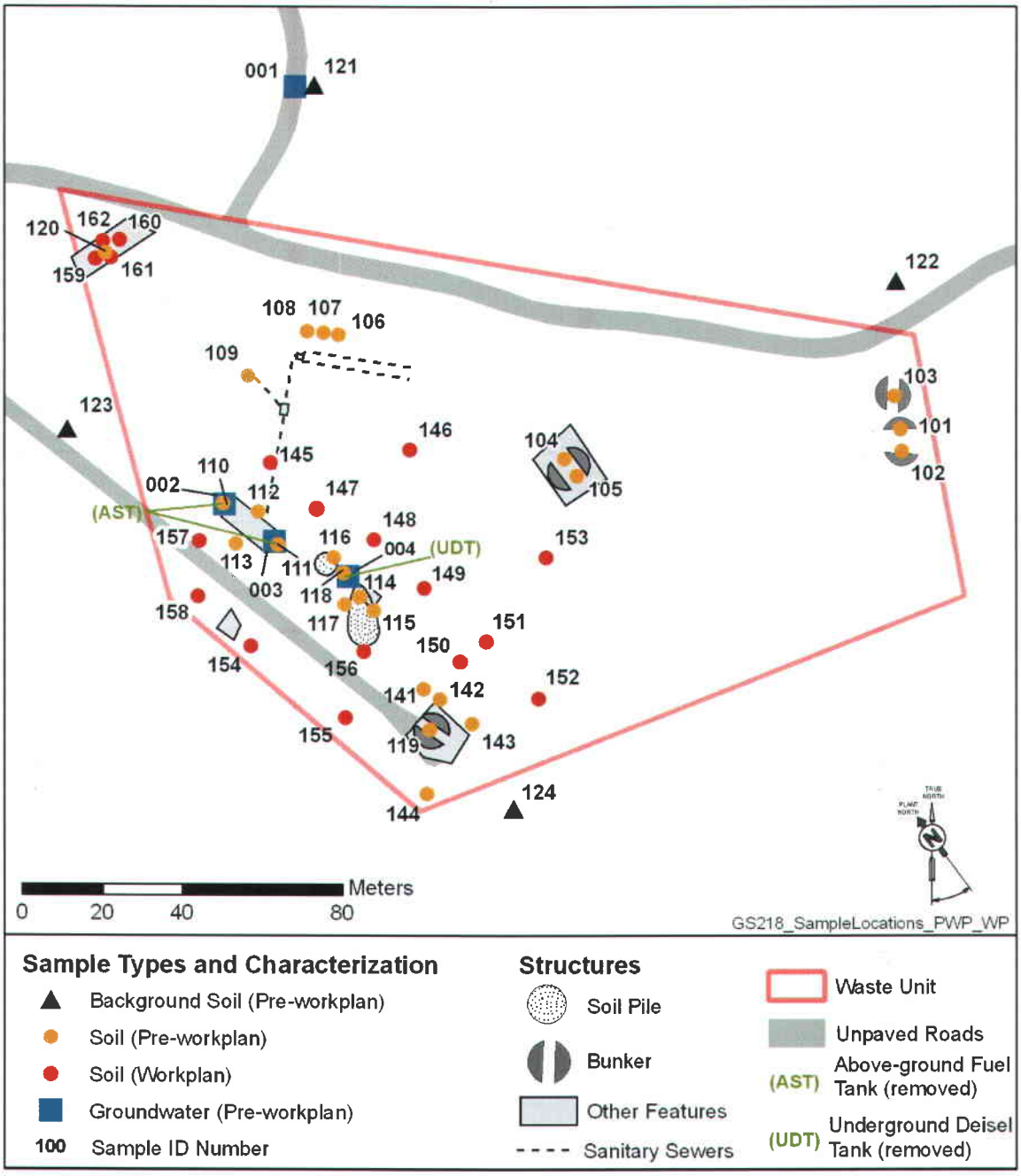


Figure 6. Sample Locations at Gunsite 218 OU

After submittal and approval of the RFI/RI Work Plan, field characterization was performed (WSRC 2008). The field characterization consisted of eighteen (18) soil borings. The samples were analyzed for TCL volatiles, semivolatiles, pesticides, PCBs, TAL metals and cyanide.

Groundwater Investigation

Groundwater was investigated during pre-Work Plan characterization. Pre-Work Plan characterization was performed in May/June 2007 and consisted of four (4) temporary piezometers that were used to collect groundwater samples (Figure 6). This sampling event focused on possible contamination source zones of petroleum spills associated with buildings, generators, or other areas; solvents, paint thinners, and paint associated with discarded cans; TCE and/or other solvents derived from cleaning artillery pieces (WSRC 2008).

There were four (4) CPT groundwater sample locations at Gunsite 218 OU. The four (4) temporary groundwater monitoring wells (G218-001 through G218-004) were sampled from the water table aquifer, and analyzed for VOCs.

Media Assessment Results

The findings of the Gunsite 218 OU investigation and assessment are documented in Appendices A though F of the SB/PP for the Gunsite 218 OU (SRNS 2009).

Soil

The human health risk assessment evaluated the 0- to 0.3-m (0- to 1-ft) soil interval; no RCOCs were identified for the industrial worker or residential receptor.

The ecological risk assessment evaluated the 0- to 0.3-m (0- to 1-ft) and 0.3- to 1.2-m (1- to 4-ft) soil intervals; no RCOCs were identified.

The PTSM assessment evaluated all soil-depth intervals; no RCOCs were identified.

The contaminant migration analysis evaluated all soil-depth intervals; no RCOCs were identified.

Groundwater

No groundwater analyte result was above its respective MCL. No groundwater RCOCs were identified.

Site-Specific Factors

No site-specific factors requiring special consideration that might affect the remedial action for the Gunsite 218 OU are present at the unit.

VI. CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Land Uses

The Gunsite 218 OU is located outside any industrial buffer zones as defined by the Land Use Control Assurance Plan for the Savannah River Site (WSRC 2009). According to the Savannah River Site Future Use Project Report (USDOE 1996), residential uses of SRS land should be prohibited. Although the Gunsite 218 OU is suitable for unrestricted land use, access to the OU is restricted within the SRS boundaries and USDOE maintains control of SRS land to prevent unrestricted uses. Future residential land use at SRS is not anticipated.

VII. SUMMARY OF OPERABLE UNIT RISKS

Baseline Risk Assessment

As a component of the RFI/RI process, a BRA was performed to evaluate risks associated with the Gunsite 218 OU. The BRA estimates what risks the site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and

exposure pathways that need to be addressed by the remedial action. The BRA includes human health and ecological risk assessments, a PTSM evaluation, and a CM analysis. A groundwater comparison to MCLs was also provided. This section of the ROD summarizes the results of the BRA for this OU.

Summary of Human Health Risk Assessment

The purpose of the human health risk evaluation is to assess the potential for adverse effects associated with exposure to constituents present at an OU. A streamlined approach that uses standardized lookup tables (i.e., USEPA Regional Screening Levels [RSLs]) to estimate risk has been used for the evaluation. The evaluation estimates the risk potential in the absence of land use controls or remedial actions at this OU and provides a basis for determining whether or not remedial action is necessary. A waste unit is considered to pose adverse health effects if the cumulative risk from all RCOCs exceeds a carcinogenic threshold greater than 1E-06 or a noncarcinogenic Hazard Index (HI) greater than 1.

The initial screening step identified the following constituents as human health constituents of potential concern (COPCs): aluminum, antimony, arsenic, copper, iron, lead, vanadium, dichlorodiphenyl-trichloroethane (DDT) and/or dichlorodiphenyl-dichloroethylene (DDE), and dichlorodiphenyl-dichloroethane (DDD). These constituents were carried through to the next step of the process, the risk / hazard quotient calculations.

Of these constituents, only arsenic was identified as a human health constituent of concern (COC). Arsenic had a risk estimate greater than 1E-06 for both the future resident scenario (risk = 6.3E-06) and the future industrial worker scenario (risk = 1.6E-06). Arsenic was carried through to the next step of the process, the refinement of COCs (uncertainty evaluation).

Arsenic was detected in 42 of 42 surface soil samples at Gunsite 218, with 26 of the detects being estimated values. Concentrations ranged from 0.414 to 8.51 mg/kg, with an

average concentration of 1.46 mg/kg. The 95% upper confidence limit (UCL) on the mean used in the risk calculation was 2.47 mg/kg. The USEPA RSL for the future resident is 0.39 mg/kg; the RSL for the future industrial worker is 1.6 mg/kg.

Arsenic is a naturally occurring constituent that is common in SRS soils. The maximum concentration of arsenic in SRS-wide soils is 22.9 mg/kg and the mean concentration is 2.23 mg/kg. Gunsite 218 unit-specific background concentrations range from 0.426 to 6.69 mg/kg with an average concentration of 1.83 mg/kg. Unit concentrations are within soil background concentrations at SRS. Detections of arsenic at this waste unit are due to natural levels in soil. Based on this information, arsenic was not identified as an RCOC.

The human health risk assessment is provided in Appendix C of the SB/PP (SRNS 2009). No human health RCOCs for either the residential (unrestricted) or industrial land use scenarios were identified in the 0- to 0.3-m (0- to 1-ft) interval for the Gunsite 218 OU.

Summary of Ecological Risk Assessment

The purpose of the ecological risk evaluation is to assess the potential for adverse effects associated with exposure to constituents present at an OU. A streamlined approach that uses standardized lookup tables to estimate risk has been used for the evaluation. The evaluation estimates the risk potential in the absence of land use controls or remedial actions at this OU and provides a basis for determining whether or not remedial action is necessary.

Screening identified aluminum, antimony, arsenic, chromium, lead, thallium, vanadium and zinc as ecological COPCs at the Gunsite 218 OU based on hazard quotients (HQs) greater than one. However, after applying additional lines of evidence in the refinement of COC evaluation, no constituents were ultimately identified as ecological RCOCs. The refinement process considers the range and magnitude of HQs, the frequency and patterns of detection, a comparison to site background, and professional judgment.

The ecological risk assessment for the Gunsite 218 OU is provided in Appendix D of the SB/PP (SRNS 2009), No ecological RCOCs were identified in either the 0- to 0.3-m or the 0.3- to 1.2-m (0- to 1-ft or the 1- to 4-ft) soil intervals.

Discussion of Principal Threat Source Material

Source materials are those materials that include or contain hazardous substances, pollutants, or contaminants that act as a reservoir for migration to groundwater, surface water, or air, or that act as a source for direct exposure. PTSM is defined as those source materials that have a high toxicity or mobility and cannot be reliably contained or present a significant risk to human health or the environment (USEPA 1991). They include liquids and other highly mobile materials such as those released from surface soil due to volatilization or leaching, or materials having high concentrations of toxic compounds. No threshold level of toxicity/risk has been established to define "principal threat." However, treatment or removal alternatives should be considered for source materials when the cumulative risk for the future industrial worker exceeds 1×10^{-3} for carcinogens or a HI of 10 for noncarcinogens. The identification of PTSM based on mobility is evaluated under the CM analysis.

Based on the PTSM evaluation provided in Appendix F of the SB/PP (SRNS 2009), no constituents were identified as PTSM.

Contaminant Migration Analysis

The purpose of Contaminant Migration (CM) analysis is to identify analytes which are present in unit soils at concentrations high enough to potentially migrate to and contaminate groundwater at levels exceeding regulatory standards. The CM analysis estimates the concentrations and timing of constituents that could reach groundwater. Constituents that have the potential to migrate to groundwater and exceed MCLs within 1,000 years were identified as CM COCs using site specific parameters. Based on the evaluation presented in Appendix E of the SB/PP (SRNS 2009), no constituents were identified as CM RCOCs.

Groundwater

A formal human health risk assessment was not performed for the groundwater media. However, groundwater concentrations were compared to MCLs. No groundwater constituent concentrations exceeded MCLs. Therefore, no RCOCs were identified for groundwater media. The comparison to MCLs is described in Appendix A of the SB/PP (SRNS 2009).

Conclusions

No human health (i.e., industrial and residential scenario), ecological, or CM RCOCs were identified for the Gunsite 218 OU. No mobile or highly toxic materials (PTSM) are associated with the Gunsite 218 OU. No constituents in groundwater exceeded their respective MCL. The revised CSM for the Gunsite 218 OU, which is based on these conclusions, is presented in Figure 5. There is no current or potential threat to public health, welfare, or the environment. Therefore, no remedial action is necessary at the Gunsite 218 OU.

VIII. REMEDIAL ACTION OBJECTIVES AND REMEDIAL GOALS

There is no current or potential threat to public health, welfare, or the environment from the Gunsite 218 OU. There are no potential applicable or relevant and appropriate requirements (ARARs) for the Gunsite 218 OU. Therefore, no remedial action objectives (RAOs) are required and no remedial goal options (RGOs) are established.

IX. DESCRIPTION OF ALTERNATIVES

No Action

Based on the Gunsite 218 OU characterization data and risk evaluation results, the Gunsite 218 OU poses no risk to human health or the environment based on an unlimited exposure and unrestricted land use scenario. For this reason, a No Action alternative has

been identified as the selected remedial alternative. No land use controls for the Gunsite 218 OU are required.

The No Action alternative does not restrict access, limit exposure, or reduce contaminant toxicity, mobility, or volume at the Gunsite 218 OU. Based on the unit characterization data and risk assessment results and the fact that no RCOCs are associated with the Gunsite 218 OU, no other alternatives were developed for consideration and evaluation.

X. COMPARATIVE ANALYSIS OF ALTERNATIVES

According to USEPA guidance (USEPA 1991) if there is no current or potential threat to human health and the environment and no action is warranted, the CERCLA 121 requirements to evaluate other cleanup alternatives or to evaluate the No Action alternative against the nine remedy selection criteria under CERCLA are not triggered. The No Action alternative will be the final action for the Gunsite 218 OU.

XI. THE SELECTED REMEDY

No Action is the selected alternative for the Gunsite 218 OU. There is no waste to treat, no institutional or engineering controls are required, and there are no ARARs. Because there are no problems warranting action at the Gunsite 218 OU, no remedial action is necessary.

XII. STATUTORY DETERMINATIONS

Based on the Gunsite 218 OU characterization data and risk evaluation results, the Gunsite 218 OU poses no risk to human health or the environment based on an unlimited exposure and unrestricted land use scenario. For this reason, a No Action alternative has been selected. No land use controls for the Gunsite 218 OU are required.

Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure, a five-year remedy review will not be required.

XIII. EXPLANATION OF SIGNIFICANT CHANGES

The remedy selected in this ROD does not contain any significant changes from the preferred alternative presented in the SB/PP. No comments were received during the public comment period.

XIV. RESPONSIVENESS SUMMARY

The Responsiveness Summary is included as Appendix A of this document.

XV. POST-ROD DOCUMENT SCHEDULE AND DESCRIPTION

No remedial action will be performed at the Gunsite 218 OU; therefore, a schedule for post-ROD activities is not provided.

XVI. REFERENCES

FFA, 1993. *Federal Facility Agreement for the Savannah River Site,* Administrative Docket No. 89-05-FF (Effective Date: August 16, 1993)

SRNS, 2009. *Statement of Basis/Proposed Plan for the Gunsite 218 Operable Unit (631-23G) (U)*, SRNS-RP-2009-00886, Savannah River Nuclear Solutions, Savannah River Site, Aiken, SC

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USEPA, 1991. *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*, OSWER Directive 9355.0-30, U.S. Environmental Protection Agency, Washington, SC

WSRC, 1990. *RCRA Facility Investigation/Remedial Investigation Plan for Gunsite 218 (U)*, WSRC-RP-90-1048, Revision 0, October 1990, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

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WSRC, 2008. *RCRA Facility Investigation (RFI/RI) Work Plan for the Gunsite 218 (U)*, WSRC-RP-2007-4051, Revision 1, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

WSRC, 2009. *Land Use Control Assurance Plan for the Savannah River Site*, WSRC-RP-98-4125, Revision 1.1, August 1999, updated October 20, 2009. Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

APPENDIX A -

RESPONSIVENESS SUMMARY

Responsiveness Summary

The 45-day public comment period for the Statement of Basis/Proposed Plan for the Gunsite 218 OU began on February 11, 2010, and ended on March 28, 2010.

Public Comments

No public comments were received on the Statement of Basis/Proposed Plan for the Gunsite 218 OU.